

Zero Liquid Discharge Solution
for
DISTILLERY EFFLUENT



DISTILLERY WASTE WATER TREATMENT BY USE OF EVAPORATION & DRYING TECHNOLOGY:

To keep our environment safe, SSP has innovated the process for treatment of various industrial effluents with economical operation and quality discharge to meet the stringent pollution control norms. Depending upon the type of effluent, various processes have been developed for the cost effective treatment of effluent. The technological solutions are provided after complete **research and trial run at our pilot plant.**

Basic thrust of this technology is to reduce the quantity of effluent to maximum possible extent by use of a multiple effect evaporator. The concentrated effluent is subsequently dried in a Dryer to form powder. The powder so obtained can be used as fuel for burning in boilers or to be used as fertilizer for growth of plants.

Zero Liquid Discharge System for Molasses Based Distilleries

Typical analysis of Direct Spent Wash and Bio-methanated effluent are:-

| Particulars | Direct Spent Wash | Bio-methanated |
|-------------|-------------------|------------------|
| BOD | 40000–60000 mg/l | 5000–8000 mg/l |
| COD | 80000–100000 mg/l | 20000–25000 mg/l |
| T.S. | 60000–120000 mg/l | 35000–40000 mg/l |
| pH | 4–5.3 | 7–7.5 |

Direct spent wash as well as bio-methanated effluent is concentrated in a multistage vacuum evaporator from 4-6% to 40-60% solids. The total process is under vacuum and the vapours generated in the system are compressed in a TVR to economize steam consumption.

STEAM CONSUMPTION IN EVAPORATORS

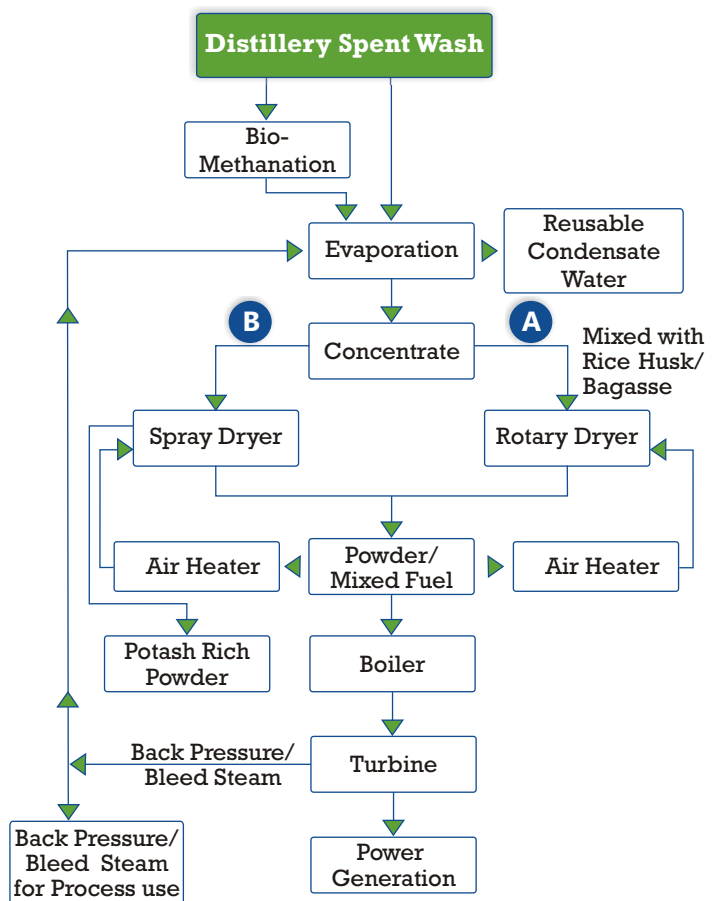
| Particulars / No. of Effects | 5 | 6 | 7 |
|---|------|------|------|
| Specific Steam Consumption with TVR over 3rd effect Steam at 8 kg/cm ² pressure | 0.13 | 0.11 | 0.10 |
| Specific Steam Consumption with TVR over 4th effect Steam at 8 kg/cm ² pressure | - | 0.10 | 0.09 |

Condensate water generated from the evaporation system is clear and recyclable for the process.

Typical analysis of condensate water:-

| Particulars | Bio-methanated | Direct Spent Wash |
|-------------|----------------|-------------------|
| BOD | 75-100 | 400-600 |
| COD | 200-350 | 1500-2000 |
| pH | 7.0 - 8.0 | 3.5 - 4.5 |

Zero Liquid Discharge System for Molasses Based Distilleries



Scheme - A: Treatment of Direct Spent Wash "Pending Patent"

The concentrated effluent is mixed with bagasse/rice husk and dried in a Rotary Dryer to generate mixed fuel. This mixed fuel is burnt in a boiler to generate high pressure steam.

Scheme-B: Treatment of Bio-methanated Effluent

The concentrated Bio-methanated effluent is dried in a Spray Dryer. The powder generated from spray dryer is mixed with coal and the mixture will be burnt in a boiler to generate high pressure steam. It can also be marketed as potash rich fertilizer.

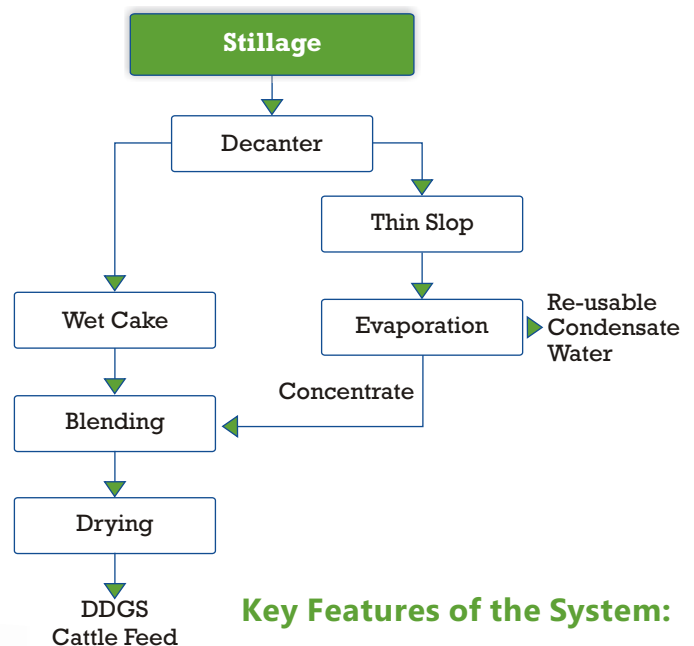
High pressure steam generated from both the scheme can be used in a turbine system to generate power. The bleed/ back pressure steam is used from the turbine as a heating medium in evaporation system and the generated power is used to meet the power requirement to operate the evaporation and drying system. Surplus power and steam will be available for distillery operation & other uses.

Zero Liquid Discharge System for Grain Based Distilleries

Grain stillage when fed into the decanter centrifuge system, wet cake & thin liquor gets separated. Thin slop is concentrated in a multistage evaporator up to 40% solids concentration. The total evaporation takes place under vacuum and the vapors generated in the system are re-used to economize steam consumption. Condensate water generated from the evaporation system is clear and can be used for the process.

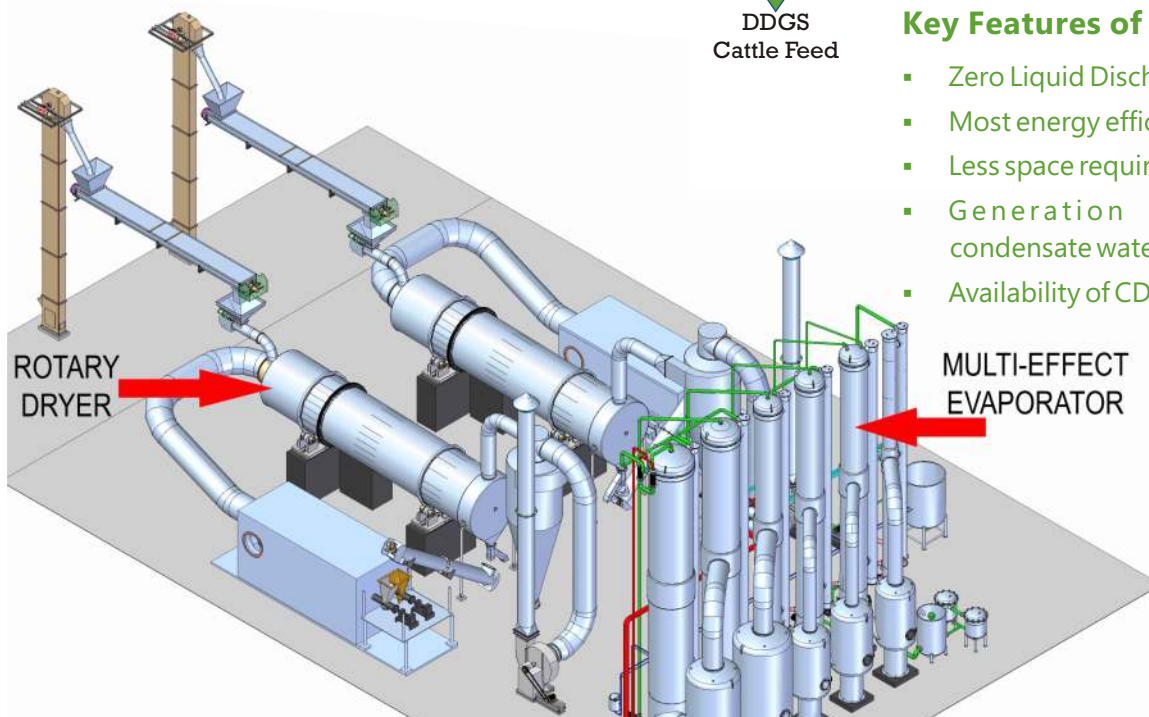
The concentrated effluent is then mixed with wet cake and dried in a Steam Tube Dryer to generate Distillers Dry Grain with Solubles (DDGS). DDGS has high nutrition value and used as cattle feed.

Zero Liquid Discharge System for Grain Based Distilleries



Key Features of the System:

- Zero Liquid Discharge System
- Most energy efficient plant
- Less space requirement
- Generation of reusable condensate water
- Availability of CDM benefit



About Us

- The company has more than 34 years of experience in providing customized turnkey projects & solutions to the industries, pertaining to food processing sector, dairy processing sector, fruit & vegetable processing sector, chemical industries and effluent treatment plant for various industries.
- It has client base in 44 countries worldwide.
- 'SSP' is an ISO 9001:2008 certified company & ASME 'U' stamp holder.
- SSP has FOUR manufacturing units with latest generation fabrication techniques and machineries for creation of world class plants using best practices.
- 'SSP' has technically sound, highly skilled & experienced work force, numbering to 450+.

Why SSP?

- More than 34 years of experience.
- Supplied projects worldwide in 44 countries.
- Supplied 350+ Spray Dryers and 600+ Evaporators till date.
- State of the art manufacturing facilities.
- Proven technology - Highly Energy Efficient Plants.
- Customized projects as per client's need.
- On-time delivery, excellent operational training, and prompt after-sales services.
- Receive 50-60% repeat orders every year.
- Follow International Standards of operation and production.

Zero Liquid Discharge System for other Effluent Treatment Plant

- Pharmaceutical industries
- Textile-dyeing industries
- Bulk drug manufacturing units
- Tannery industries
- Edible oil refineries
- Black liquor in paper industries
- Yeast plant
- Reisin/Geletine industries
- Caustic recovery from mercerising unit

